

Recommendations of the Montgomery County Technical Group on Sequestration

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Introduction

Land use practices are both a source and sink of carbon. Carbon stored or sequestered in soil and vegetation increases plant productivity and provides numerous co-benefits for climate adaptation, compared with carbon in the atmosphere where it traps heat, thereby changing the earth's climate and the entire earth system. These changes are experienced primarily through

higher temperatures and heavier storms, which can be mitigated through sequestration practices or natural infrastructure that can reduce urban heat island effects and flooding. Other important co-benefits are improved air and water quality, conservation of biodiversity, reduced energy costs, recreational opportunities and other benefits for quality of life associated with green spaces.

The subgroup on sequestration considered options for increasing carbon storage through a range of land-based practices that can be collectively referred to as Nature-Based Solutions (NBS), in which carbon is removed from the atmosphere by plants and soils. These are also solutions that are immediately available and considered the low hanging fruit. NBS also include avoided emissions through conservation of forests and wetlands, improved agricultural methods such as using cover crops and compost use practices that further increase soil carbon.

Although federal incentives can increase the potential for Nature-Based Solutions, given the County authority for land use decisions and the direct local co-benefits for adaptation, it is also an aspect of climate change that must be and are best addressed at the County level. The group did not consider technological solutions such as direct air capture, as these are not currently available and their development will require levels of public funding that are beyond the capacity of local governments.¹

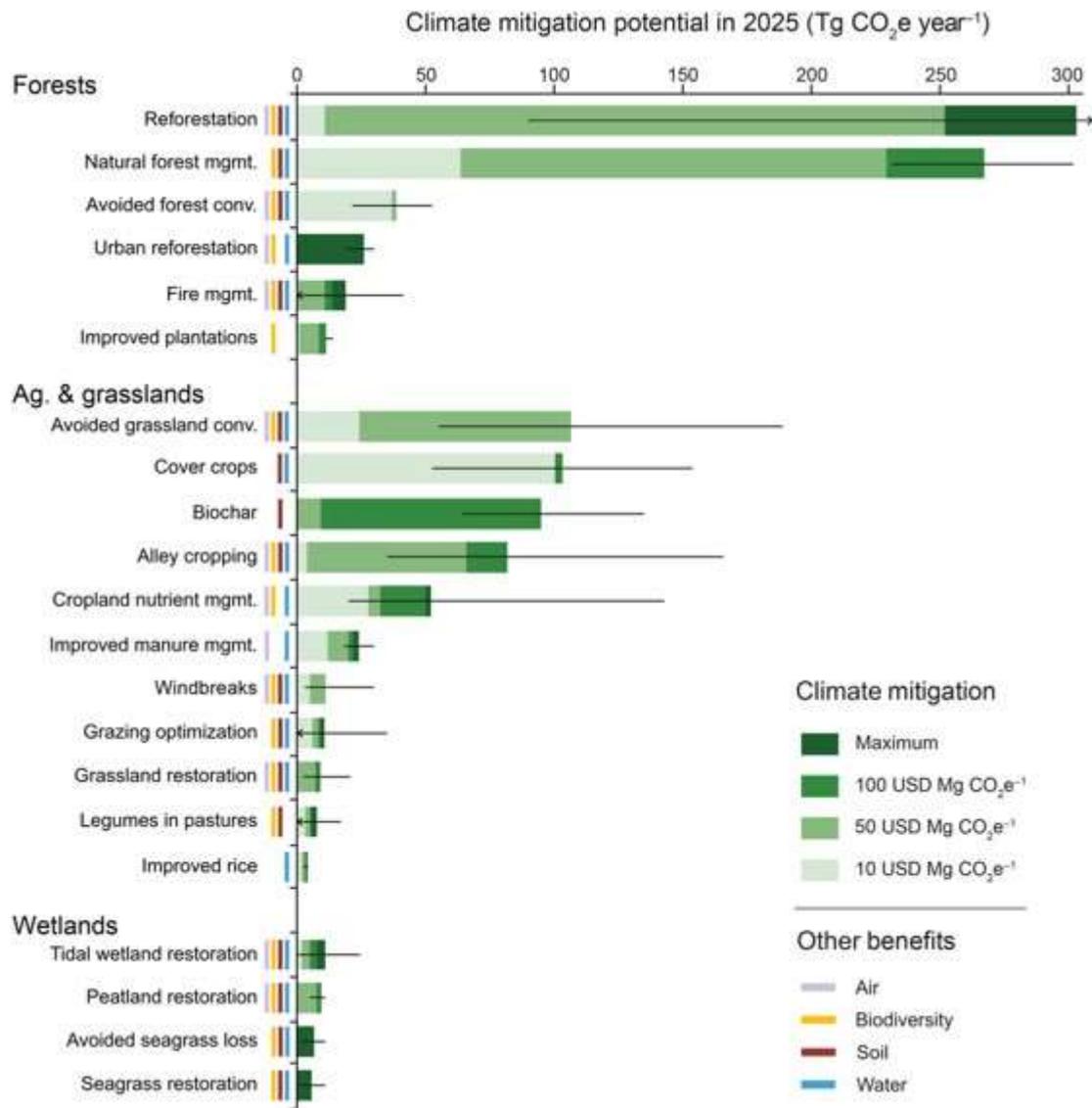
Montgomery County has been a leader in innovative land use policies that provide a foundation for increasing carbon sequestration in ways that support adaptation, and are a critical component of the County climate strategy. These policies are exemplified in the establishment of the Stream Valley Park System and the Agricultural Reserve, which, combined with state and national parkland and WSSC lands, cover 47% of the county land area. These were, ahead of their time, intentionally designed to protect 100-year floodplains and sourcewater areas. The Reserve now contains most areas in the County with less than 10% impervious cover, and watersheds with good or excellent stream health. An important exception is the part of the Ten Mile Creek watershed that is outside the boundaries of the Reserve, where imminent development plans would significantly increase impervious cover in two critical sub-watersheds that currently have impervious cover of 1.2% and 1.6%.

However, the boundaries of 100-year floodplains are shifting with increases in both development and heavy storms associated with climate change. The more rural up-county areas are subject to the most intense development pressure. The highest rate of deforestation in the County is now found in the vicinity of Clarksburg. Expansion of floodplain protection and buffer areas can increase areas for carbon sequestration but needs to be complemented with greater emphasis use of vegetation-based green infrastructure practices upslope, that reduce

¹ For more information on the full range of potential approaches to carbon removal, see: Mulligan, J., A. Rudee, K. Lebling, K. Levin, J. Anderson, and B. Christensen. 2020. "CarbonShot: Federal Policy Options for Carbon Removal in the United States" Working Paper. Washington, DC: World Resources Institute. Available online at www.wri.org/publication/carbonshot-federal-policyoptions-for-carbon-removal-in-the-united-states.

stormwater runoff as well as sequester carbon on-site, where the rain falls. Sequestration can also be supported through practices that improve soil health, principally composting of various sources food waste and use of the compost. In addition to increasing sequestration, composting of food waste avoids a large source of emissions from food now sent to the incinerator and landfills.

Although NBS are not a substitute for emissions reductions, it is generally agreed that climate targets cannot be met through emissions reductions alone. Globally, loss of forests and agricultural practices account for 23% of human emissions and land absorbs one third of emissions from fossil fuels and industry. Within the United States, a recent study by Fargione et al 2018 evaluated 21 selected land based Natural Climate Solutions and estimated these could reduce emissions 26-28% from 2005 levels by 2025. See Figure 1. Among these, the maximum potential is in reforestation, for which the greatest potential is in the Northeastern United States.



(1) **Figure 1: Climate mitigation potential of 21 Natural Climate Solutions in the United States.** Source: J. E. Fargione, S. Bassett, T. Boucher, S. D. Bridgman, R. T. Conant, S. C. Cook-Patton, P. W. Ellis, A. Falcucci, J. W. Fourqurean, T. Gopalakrishna, H. Gu, B. Henderson, M. D. Hurteau, K. D. Kroeger, T. Kroeger, T. J. Lark, S. M. Leavitt, G. Lomax, R. I. McDonald, J. P. Magonigal, D. A. Miteva, C. J. Richardson, J. Sanderman, D. Shoch, S. A. Spawn, J. W. Veldman, C. A. Williams, P. B. Woodbury, C. Zganjar, M. Baranski, P. Elias, R. A. Houghton, E. Landis, E. McGlynn, W. H. Schlesinger, J. V. Siikamaki, A. E. Sutton-Grier, B. W. Griscom, *Natural climate solutions for the United States. Sci. Adv.* 4, eaat1869 (2018).

Within the County, loss of forests and agriculture account for less than 2% of direct emissions. However, the potential for increased carbon sequestration in vegetation and soils depends on the amount of land available for sequestration, and on the extent to which innovative practices

are adopted. For example, according to recent modeling by Colorado State, the County's agricultural lands in commodity crops could sequester on the order of two tons CO₂-e/ha/yr with basic conservation agriculture practices. Adding conservation buffers - narrow strips of land in permanent cover of perennial grasses - could double this estimate. Adding additional practices such as compost applications or selective silviculture would increase the sequestration further.

The amount of land available for sequestration is closely tied to land use policies that shape development patterns, which are in turn tied to other emissions sources that would be reduced indirectly. For example, land protection which limits sprawl development patterns also reduces Vehicle Miles Traveled and infrastructure needs. Increased concentration of the population in designated corridors also increases the economic feasibility of expanding public transportation systems. In addition are the numerous co-benefits mentioned above.

The overall objectives of this report are twofold:

- To make the case for the value or benefits of land-based carbon sequestration as a core component of the County's climate strategy as a way to help gain public support, i.e., why should we do it? and
- To provide recommendations that are as specific as possible and that highlights opportunities for land-based carbon sequestration.

Recommendations in this report are grouped around a set of nine goals, three overarching, and six that are sector specific.

First among the overarching goals is to strengthen land use policies to provide a foundation for maximizing carbon sequestration and increasing resilience. Land use policy is also the most significant authority of this County government. In other words, it is an area in which the County has more control than over many other emission sources, such as the availability of affordable electric vehicles and more efficient heating and cooling systems. Coincidentally with the development of a Climate Action and Resiliency Plan, the County is also in the process of revisiting and updating the entire General Plan, where it will be important to build on and strengthen the County's unique legacy with respect to land use policy.

A second overarching goal will be to better integrate and align activities among numerous County departments and programs in support of climate goals and to implement the sector specific recommendations which involve: protection and restoration of forests, wetlands, trees outside of forests and in urban areas, regenerative agriculture, restoration of soil health, and closing the loop by establishing a county-wide system for capturing and composting organic waste and using it in land-based carbon sequestration practices.

The third overarching goal is to move from silos to systems change and enable innovation to increase carbon sequestration in ways that maximize co-benefits for adaptation.

Sector specific goals:

4. Increase protections for existing trees and double tree canopy in the urban, suburban, and other non-forest areas of Montgomery County, leading to a net increase in the amount of carbon sequestered in trees in the county to 2030 and beyond.
5. Establish a strict policy of no further loss, and expand where possible, the county's natural wetlands.
6. Increase the county's forest area to 37% in 2027 and 45% in 2035 (compared to 34% in 2001-2016)
7. Engage and support farmers, gardeners and their organizations in an aggressive transition to regenerative agricultural practices.
8. Healthy Soils: Restore the earth's carbon, water and energy cycles as a key climate solution by restoring the soil's biofertility, microbial activity, surface areas and moisture holding capacity.
9. Close the loop by establishing a county-wide food and other organic waste composting system for government, commercial and residential buildings to reach a minimum of 70% diversion, and increase the use of compost for improving soil health and carbon content.

Each goal is followed by the rationale for the goal, supporting recommendations, actions and comments if any.

Overarching goals

Goal 1: Strengthen land use policies to provide a foundation for maximizing carbon sequestration and increasing resilience

Rationale:

Montgomery County has been a leader in innovative land use policies that enable carbon sequestration, and provide a foundation for increasing it in ways that also increase climate resilience. Key among these are the establishment of the Agricultural Reserve using Transferable Development Rights (TDRs) in exchange for agricultural easements in perpetuity, and the establishment of the Stream Valley Park System, which encompasses most of the 100-year floodplains and has already enabled the County to avoid significant amount of flood damages. Up-county watersheds are also water source areas.

However, the boundaries of 100-year floodplains are shifting as a result of both heavier storms associated with climate change, and increasing development outside the floodplains, which not only increases water flow to the floodplains, but also increases urban flooding outside the floodplains. Development patterns are also placing pressure on the Agricultural Reserve and the low-density buffer zone, and are increasing stormwater runoff that enters the Potomac very

close to the drinking water intake, which in turn is increasing the costs of water treatment. Even within the Stream Valley Parks and the Agricultural Reserve, there is a legacy of highly eroded soils from a previous era, and therefore, great potential to increase soil health through carbon sequestration. Carbon sequestration is also a cornerstone of climate policy because enabling land-use policies, including the protection of existing forests, agricultural areas and open spaces, also reduce emissions associated with sprawl development patterns that increase vehicle miles traveled, and can help reinforce a "road diet". Building requirements for green infrastructure practices that retain stormwater on site also increase carbon sequestration. At this critical juncture, it is important to both reinforce and build on the County's unique legacy.

The following set of recommendations are aimed at strengthening land use policies in ways that enable greater carbon sequestration.

Recommendations:

- 1.1 Set a minimum overall sequestration target as a percent of county emissions.
- 1.2 Incorporate sequestration and adaptation goals into county land use priorities
Incorporate sequestration and adaptation considerations into county land use priorities, resolve any programmatic conflicts, and generate a road map for action and investments that can increase carbon sequestration in ways that maximize benefits for climate adaptation.

Actions:

1. Conduct a review of public and private lands to identify specific locations where increased investment and/or changed priorities are needed to maximize carbon sequestration on all land types: agricultural lands, natural forests, wetlands, urban and suburban landscapes, and all kinds of public and private properties (schools, recreational facilities, shopping centers etc).
2. Map overlay of the implications of Climate Workgroup recommendations for comparison with ongoing county programs to pinpoint both low-hanging fruit as well as areas that need resolution between conflicting goals.
 - a. Assess carbon sequestration values of existing natural vegetation as well as opportunities for ecosystem restoration that have the maximum potential for increased sequestration and co-benefits for climate adaptation. This would build on existing data and assessments and established tools for estimating carbon stock in natural vegetation Comments: Tree Canopy Study 2011, Tree carbon study just published 2019, Sierra Club Forests and water Study 2018, and tools like iTree and COMET).
3. Create Carbon Sequestration Zones and use these also for education purposes, by show-casing how sequestration works and the multiple benefits it achieves. These may be in parks, schools, campuses etc. Others may be more ambitious "Zoning" for maximizing sequestration practices particularly responsive to the natural conditions of

the site, and for benefits such as sourcewater protection.

4. Review the county's land use planning processes and zoning regulations to identify those provisions that either encourage or discourage reforestation and forest and wetland preservation. This review should be the basis for expanding the positives and amending or eliminating the negatives, in terms of climate protection.

Comment: The county's land use policies and provisions have evolved over many decades during which the focus and underlying assumptions have changed considerably. Climate was only a minor consideration, or totally absent as a concern, during most of this history.

1.3 Identify and adopt policies needed to enable or incentivize sequestration in targeted areas.

Actions:

1. Potential for carbon sequestration where it has co-benefits for adaptation should be among the key criteria for making land use policy decisions. This is where the Montgomery County government has the greatest authority with respect to addressing climate change.
2. Cancel the proposed M-83 highway which threatens 73 acres of floodplain forests and wetlands in Germantown, Clarksburg and Gaithersburg, would worsen flood hazards in Montgomery Village, increase greenhouse gas emissions from transportation, and enable further development of rural and forested areas in areas that are now hotspots of deforestation in the County.
3. Prioritize protection of watersheds rated high to excellent, which have low impervious cover and high value for drinking water quality and conservation of biodiversity, such as Ten Mile Creek with a protection overlay that limits impervious surfaces at the sub-watershed scale, consistent with the Master Plan, and prohibiting waivers for exceeding these limitations. Consider also establishing a forest reserve in such high-quality watersheds outside the Agricultural Reserve.

Comment: The Ten Mile Creek watershed is Montgomery County's flagship of biodiversity and the cleanest source of drinking water to Little Seneca Reservoir, a drought backup reservoir for the entire DC Metropolitan Area, and the region's only nearby emergency drinking water supply. Although the County took steps to protect the Ten Mile Creek Watershed in 2014, currently proposed development, would exceed the impervious cap of 5% which the Master Plan says is necessary to protect the two most sensitive and very small sub-watersheds. The proposed development would increase impervious cover in these from 1.2 and 1.6% to 12.8 and 7.3% respectively, with potential for additional development in the latter that would bring it to 10.1%. Studies indicate that watersheds begin to degrade at less than 3% impervious cover and that at 10%, a stream's rating is never "good".

4. Areas that could have great potential for added sequestration include land along highways, school lawns not used for athletic purposes, and lawns on very large residential lots.
5. Encourage meadows in the place of large lawns.

6. Consider changes that may be needed in policies pertaining to HOA governance to enable increases in carbon sequestration in residential areas.
7. Establish a landscape certification program for carbon sequestration (similar to LEED for buildings), based on measurable standards and require this certification for new development.
8. Revise and expand floodplain boundaries and buffer areas in light of changes in the water cycle associated with climate change.
9. Use green infrastructure practices that sequester carbon as the default practice for stormwater management in upland areas. Establish stringent criteria for the approval of alternative structural practices and provide public notification with an opportunity for public comment.

1.4 Strengthen protection of the Agricultural Reserve and rural low-density buffer areas which provide multiple benefits that are critical to the County's emissions, sequestration and resilience goals.

Actions:

1. Reinforce existing policies, zoning laws and other measures to avoid additional conversion of agricultural land to residential or commercial development in the Reserve and maintain agriculture as the preferred land use.
2. Prevent sprawl of both roads and sewer infrastructure that enable higher density development in rural low-density areas outside the Reserve

1.5 Establish carbon sequestration zones in water source areas, as the first barrier in the multiple barrier approach to water quality protection.

Actions:

1. Increase public awareness that part of the justification for the Agricultural Reserve and Rural Low-Density zoning was that they are public water supply areas.
Comment: Master plans for the up-county justify the Ag Reserve and Rural Low density zoning in part because they are public water supply areas. This fact needs to be common knowledge rather than be buried in ancient master plans
2. Educate the public about the "[multiple barrier](#)" approach to protecting the public water supply, the value of forests and other carbon sequestration practices as part of the this approach to protecting public water supplies, and implications of land use for water treatment costs.

Goal 2: Accelerate the implementation of carbon sequestration strategies using nature-based climate solutions across all County programs and policies.

Rationale:

Local counties and cities across the USA are discovering the need to reorient programs, staff roles, and policies in order to respond to the climate emergency. In Montgomery County, substantial effort is already underway through the County Department of Environmental Protection (DEP), the MNCPPC, this Workgroup process, Thrive Montgomery 2050 and many Council initiatives and policies. Nevertheless the need for explicit integration of carbon sequestration into all aspects of county business requires leadership with a strong mandate, explicit mechanisms for integration across sectors, capacity building, revised job descriptions, close coordination with other municipalities and the state, increased data collection as well as substantial public outreach and new partnerships. Examples and guidance from the both Drawdown, and Urban Drawdown are particularly relevant: www.drawdown.org - <https://urbandrawdown.solutions/>

Recommendations:

2.1 Create a Climate Change Emergency Office directly under the County Executive with the mandate to integrate sequestration using natural climate solutions with all departments, programs, stakeholders and coordination with state, other counties, etc.

2.2 Hold orientation sessions among County departments and key stakeholders to review the outputs from the Climate Action Plan workgroups - building engagement.

2.3 Review and implement all recommendations from the 2018 Climate Mobilization Report, particularly programs and incentives highlighted for agriculture, food waste management, and composting.

2.4 Evaluate and rank high, medium, low priority existing county programs and potential new efforts proposed by the Workgroups for reducing emissions both rapidly and through sustained longer-term reduction strategies.

This assessment should explicitly consider increased climate resilience and other co-benefits (such as cleaner water, biodiversity conservation, etc.) as well as equity and economic considerations.

Comment: Montgomery County - as the first County jurisdiction to declare a Climate Emergency; as a rural/ urban/ suburban county; as a County with a number of growing cities; as one of the wealthier Counties in the USA etc - can both gain through selecting such bold initiatives and become a leading inspiration to others.

2.5 Thrive Montgomery 2050: Coordinate with the Montgomery County Planning Department to ensure all the high priority recommendations of the Climate Plan are included in the update of the General Plan-2050

Actions:

1. [Current status of the issues identified by the Planning Department](#) need to be reviewed and analyzed to identify which issues and potential policy recommendations are similar and support the priority ones in the Climate Plan and identify any areas that need to be addressed such as carbon sequestration and adaptation related to establishing a planning foundation for the county for 2050

2.6 Execute Climate Plan recommendations and programs in cooperation with regional plans and programs.

Actions

1. Review Climate Plan recommendations with Washington Council of Governments' (MWCOG) and surrounding counties to identify and ensure collaboration and opportunities to maximize cooperation for achieving mutually beneficial goals.

2.7 Identify and review existing reports and programs to maximize current programs and identify the need for new programs, staff, and authorities to achieve goals.

Actions:

1. For review of existing reports refer to the document in the Resources section: "MC Government Reports Related to GHG emissions."

Comment: Examples of existing reports include: County Executive Transition Team Report Recommendations, MC Planning Department General Plan

Update, Department of Permitting Services and the International Green Construction Code, Department of General Services Office of Energy and Sustainability Goals and Program.

2. Survey county agencies and divisions to identify and establish county programs that impact (increase and decrease) greenhouse gas emissions and additional authorities that may be needed to support programs that decrease them.

Comment: An example of where clearer lines of authority may be needed is the protection of drinking water source areas through protection of forests, because the utility does not manage land or watersheds, and the County prioritizes more distressed urbanized watersheds for achieving water quality goals, which do not impact drinking water supplies.

3. Evaluate and rank high, medium, low priority programs to expand and modify to increase reductions and recommend additional programs to reduce emissions both rapidly and through sustained longer-term reduction strategies.

Comment: Examples of existing programs that are short on staff and could support a carbon sequestration strategy are the Rainscapes and Tree Montgomery programs.

Goal 3: Move from silos to systems change - taking a "whole systems" approach that enables innovation to increase carbon sequestration in ways that maximize co-benefits for adaptation

Rationale

Increasing carbon sequestration (along with adaptation and other aspects of the Climate Action Plan) represent fundamentally new goals that are often at odds with existing goals and trajectories. They are also not supported by existing institutions and structure of government, which were set up to address a different set of challenges. For example, implications of policies for the functioning of critical natural infrastructure, e.g., forests and wetlands, is often overlooked because of biases in standard approaches to cost-benefit analysis as well as inequities in how benefits, costs and risks are distributed. Siloed government can also be a barrier to recognizing and being able to maximize the co-benefits of sequestration projects and to leverage complementary funding sources. Numerous other persistent challenges or "archetypal patterns" associated with adaptation finance are identified in a study by Moser et al (2019)², conducted among local governments in California - but that could just as easily be applied to Montgomery County, and which finds that it is not enough to simply have more funding.

The ability to pursue new goals therefore depends on the capacity for innovation and on enabling desired systemic and transformational change. All of the Sequestration sub-workgroup

² Moser, S. C., Ekstrom, J. A., Kim, J., & Heitsch, S. (2019). Adaptation finance archetypes: Local governments' persistent challenges of funding adaptation to climate change and ways to overcome them. *Ecology and Society*, 24(2), art28. <https://doi.org/10.5751/ES-10980-240228>

recommendations are systemic in that they consider relationships among different actions and sectors, and to co-benefits for adaptation. This section gathers the more cross-cutting recommendations not tied to particular sectors, such as financing, public engagement, and cross-sector analysis, particularly in the food system, which not only offers opportunities for sequestration, but also for both direct and indirect emissions reductions.

Recommendations

3.1 Leverage complementary funding sources for water quality protection practices that also sequester carbon.

Several water quality measures also sequester carbon and have dedicated funding sources or other types of financial incentives. These include the Water Quality Protection Charge, primarily used to fund compliance with the MS4/Stormwater Permit, and incentives for agricultural Best Management Practices that protect water source areas.

Actions:

1. Prioritize and maximize the use of natural or green infrastructure practices for achieving compliance with the County MS4 or Stormwater Permit by developing standard practices for assessment and comparison of green and gray infrastructure options for all stormwater management projects.
Comment: Green infrastructure, i.e., vegetation-based practices that promote water infiltration in soil and reduce stormwater runoff and sequester carbon are not the default practice and only account for a limited portion of projects.
2. Proactively identify opportunities for natural green infrastructure projects and conduct a place-based participatory assessment so that these are “investment ready” and windows of opportunity can be acted upon.
3. Revise County Codes to eliminate the granting of waivers on stormwater requirements for new development or make fees-in-lieu commensurate with the cost of managing stormwater runoff with green infrastructure practices that sequester carbon.
Comment: At present, stormwater permits only require retrofits of areas not already treated to the maximum extent practicable, as this is presumably required for new development. In practice, new developments are often granted “waivers” and able to pay a small “fee in lieu” of installing stormwater management practices.
4. Build on the existing Rainscapes program which promotes and provides technical assistance and financial incentives for conservation landscaping that reduces stormwater runoff, to also maximize carbon sequestration.
5. Establish a baseline of existing forest cover that can be used to demonstrate forest conservation is additional so that it can be credited for water quality protection purposes (under anticipated new provision in MDE MS4 draft Accounting Guidance document).
6. Delineate sourcewater areas and prioritize these areas for conservation easements that can also receive credit for water quality protection (under an expected new provision in new MDE MS4 draft Accounting Guidance document)
 - Comment: Up-county watersheds all enter the Potomac near or adjacent to the WSSC water intake, which has significantly increased the cost of water treatment. New draft MS4 Accounting Guidance would also credit conservation of

forests that are not otherwise protected. This could be a game changer because it can prevent degradation of water quality as well as mitigate flooding and sequester carbon.

7. Establish a Retention Credit Trading program (similar to that in DC) which enables third party project developers to achieve economies of scale by engaging multiple landowners and achieving economies of scale in landscape restoration activities that have both water quality and carbon sequestration benefits.

3.2 Develop creative financing for nature-based solutions in Montgomery County.

Actions:

1. Work with the Montgomery County Green Bank to incorporate financing and revolving loan funds for reforestation, silviculture and regenerative agriculture programs where appropriate.
2. Invest in making the case for the effectiveness and potential cost-savings associated with nature-based solutions and market these projects to impact investors in the state, working in partnership with foundations and high wealth donors.
3. Encourage the Montgomery County Economic Development Corporation to engage with investors from outside the County that are interested in investing in carbon sequestration projects.
4. Leverage the county's considerable political clout by advocating for financing from Congress for cities and counties to maximize nature-based solutions.
5. Learn, innovate, and scale approaches that drive finance and other incentives to landowners and farmers. In particular, review how the county applies the property tax to different land uses agricultural land and how it could be modified to encourage sequestration as well as changes in land use that reduce net emissions.
6. Undertake a review of/ build learning partnerships with states/ counties that are piloting and scaling such programs. Examples are Boulder County, Colorado and the many experiments with NORI, blockchain and more.

3.3 Maximize the engagement of young people in all we do by partnering with Montgomery College, MCPS, and other educational and youth-based programs (e.g. 4H) to develop education, training, and work experience opportunities grounded in nature-based sequestration systems.

Actions

1. Provide reforestation and compost job training and placement programs
2. Partner with State and Congressional delegates to seek funding for a statewide youth Climate Conservation Corps as a possible pilot for the nation - to assist with urban garden development, urban tree planting, and restoration projects that can help sequester carbon. Employ youth in summer jobs, focusing on disadvantaged and low-income youth as a priority.

3.4 Implement workforce development, re-entry and job training programs, job opportunities and entrepreneurial training and support with a special focus on providing these opportunities to underserved communities

3.5 Launch a far-reaching education and engagement campaign to the general public and to every sector in the county on why, how and what they can do to sequester carbon to mitigate climate change.

3.6 Leadership by example: Explore joining bold new platforms.

Leadership by example: Explore joining bold new platforms. For example the Urban Drawdown Initiative or several tree planting initiatives such as the trillion tree pledge. Montgomery County can both learn and contribute to and from a broader climate effort via these platforms.

3.7 Launch a public education and engagement campaign throughout the county to educate about the benefits of and encourage plant-based diets

Actions

1. Encourage the consumption of a plant-based diet with foods from farmers that use regenerative agricultural practices.
2. Review “consumption-based,” carbon-based emissions assessments and programs such as those instituted in Portland, San Francisco, Seattle, Vancouver, London that include plant-based diet and menu programs.
Comment: Portland Multnomah County reported that the consumption-based emissions total was more than twice the amount of sector-based emissions. [Vancouver’s “Greenest City Action Plan”](#) includes an ecological footprint measurement significantly influenced by food consumed by residents.
3. Expand existing county-based programs such as MCPS meatless offering and “Live Well” initiatives
Comment: Identify and apply best practices for plant based education and behavior change programs such as [Meatless Mondays](#) and Meatless March <https://www.meatlessmonday.com/>
4. Partner with existing local and national programs to utilize best practices for plant based education and behavior change programs such as those provided in the World Resources Institute [“Playbook for Guiding Diners Towards Plant- Rich Dishes in Food Service”](#); and the National Resources Defense Council [Climate-Friendly Menus](#) program which offers fact sheets and strategies on increasing plant based diets.

Comment: Partner with the Johns Hopkins Center for a Livable Future Meatless Mondays initiative: <https://clf.jhsph.edu/projects/technical-and-scientific-resource-meatless-monday>

5. Encourage the “less meat, better meat” approach to eating animal foods by educating county residents on the harmful impacts of confined animal feedlot operations (CAFOs). Share cost-saving strategies to support residents, restaurants and institutions in making this transition.

Comment: Educate residents utilizing available resources which include:

- i. The Center for Food Safety’s Soil Solutions <https://soilsolution.org/>, Real Organic Project <https://www.realorganicproject.org/>, the Carbon Cowboys <https://carboncowboys.org/research>, The Savory Institute <https://www.savory.global/>, and Kiss the Ground <https://kisstheground.com/>.
- ii. Utilize the “Balanced Menus - Less Meat, Better Meat” approach developed by the Healthy Food in Health Care Program of Health Care Without Harm <https://noharm-uscanada.org/content/us-canada/less-meat-better-meat> in order to provide menu planning and food purchasing strategies for consumers, institutions and restaurants.
- iii. Utilize the guide on “Cost Saving and Revenue-Generating Strategies for Purchasing Local Sustainable Meat, Poultry and Other Sustainable Foods” [developed by Maryland Hospitals for a Healthy Environment: https://drive.google.com/file/d/0B9R0wADm2kBgajV2eIJGd0tWMjg/view](https://drive.google.com/file/d/0B9R0wADm2kBgajV2eIJGd0tWMjg/view) for institutions, restaurants and consumers

3.8 Analyze every sector of our food system to identify their impacts on climate change and opportunities for solutions that also increase food security.

There are opportunities to link a set of activities into a system for managing the cycle of food/ yard waste into compost and into organic fertilizer at a scale which enables Montgomery County to reduce emissions (waste incineration, transport), increase carbon sequestration on farms (organic fertilizer deepens the drawdown value of conservation practices), promote better access to nutritious food for underserved groups (donated food), and stimulate community and individual food gardens.

Actions

1. Review programs and policies being implemented in other regions to determine which successful programs to adopt and create new programs and policies where they don’t exist.

Comment: Stakeholders working on this analysis and potential partners include but are not limited to: County HHS, Office of Ag., MC Food Council, County farmers, MoCo Agricultural Reserve, Sugarloaf Citizens Association, Montgomery Countryside Alliance, Chesapeake Farm to Institution Work Group <http://www.chesapeakefoodshed.net/chesapeake-farm-to-institution-work-group/>, national institutional networks that work regionally as well including Farm to School,

School Food Focus,, Real Food Challenge (university sector), Healthy Food in Health Care, etc

2. Prioritize and implement those programs and policies with the highest impact on sequestering carbon, reducing greenhouse gas emissions and providing other co-benefits to communities.

Comment: Food system sectors that need to be analyzed include: Seed Selection; Production; Environmental Protection; Processing; Storage; Refrigeration; Procurement; Purchasing Contracts; Distribution; Transportation; Recovery; Waste; Economic Development; Access; Production/Agriculture; Security; Procurement; Purchasing Contracts; Environment; Economic Development; Resilience; Adaptation.

3. Reduce food and paper waste and excess.
4. Increase recycling of paper and other wood products.
5. Provide incentives for farmers to increase forest land and food forests (agroforestry) on their properties. Create opportunities for them to harvest and sell the wood and other “products” from these forests to surrounding residents.
6. Support construction of affordable housing and commercial and municipal buildings with sustainably-harvested wood—replacing carbon-intensive concrete and steel

Sector specific goals

Goal 4: Increase protections for existing trees and double the tree canopy in the urban, suburban, and other non-forest areas of Montgomery County, leading to a net increase in the amount of carbon sequestered in trees to 2030 and beyond.

Rationale:

Overall trees and forests are a carbon sink for Montgomery County, offsetting emissions in other sectors by approximately 11.3 million metric tons each year (or around 41 million tCO₂) as of the latest period of analysis (2011-2016, based on report by World Resources Institute for the County in 2019). Trees outside of forests currently store over 3 million metric tons of carbon accounting for about ¼ of the total carbon in trees in the county. Montgomery county’s net sink could be larger if additional forests/trees were added to its land base, and/or if losses of trees were reduced. Residential areas have the highest percentage of tree cover outside forests at about 50%. Trees outside of forest can sequester more carbon (new carbon storage) than existing trees in forests. Open unused spaces on both private and public lands of Montgomery County offer immediate opportunities to build on current programs to increase tree canopy which can provide other crucial climate and non climate co-benefits providing shade and wind

protection to reduce energy use for cooling and heating and increase water infiltration to reduce runoff, provide habitat and food for wildlife and improve the air quality for county inhabitants.

Recommendations:

4.1 Ensure that goals for increasing trees are considered during all planning, zoning, and permitting processes.

Ensure that goals for increasing trees are considered during all planning, zoning, and permitting processes and that the Planning Commission and County Council have the knowledge and understanding to promote these goals across all relevant county departments. Integration should also involve coordination with planning processes that include State and DC offices as well as regional water, gas and utilities.

4.2 Require commercial land developments to have a net zero carbon emissions or a positive sequestration value and address climate change risks such as flood mitigation, and shade for residential and commercial buildings.

Require commercial land developments to have a net zero carbon emissions or a positive sequestration value and address climate change risks such as flood mitigation, and shade for residential and commercial buildings.

Actions:

1. The County Council should establish a zero emissions policy.
2. The Planning Commission should develop specific guidelines for natural carbon assessments using reputable calculators such as iTree and COMET that can be combined with building, transport and energy guidelines.

4.5 Update and consolidate the County's many tree planting programs into an easy "one stop shopping" web portal for the public.

Update and consolidate the County's many tree planting programs into an easy "one stop shopping" web portal for the public. A multitude of tree planting efforts on private land and street right-of-way are underway, such as Tree Montgomery, Shades of Green and Leaves for Neighborhoods, which provide free and reduced-price trees in the County. Some of these are funded through fees charged to developers.

4.6 Launch an aggressive tree planting initiative for areas of high priority on both public and private land.

Actions:

1. Develop explicit place based map for tree planting campaign utilizing recent 2018 and 2019 analyses and an update of the 2011 Tree Canopy study

2. Mapped priorities for species and locations should explicitly reflect climate change considerations and provide opportunities for active community engagement. Upper watershed areas of the County would be one of the priority areas.

4.7 Prioritize mature trees and street tree planting and maintenance. Allow some revenues from developer fees to be used by the Transportation Department for stump removal and replanting on street right-of-ways.

Actions

1. Create stricter prohibitions against cutting of mature trees, forests, and/or increased penalties for illegal cutting of natural vegetation.
2. Increase investment in tree maintenance and health throughout the County.

4.8 Document and promote doubling by 2035 of “micro-forests” or urban forests on both public and private lands.

Actions:

1. Devise a detailed definition and County strategy for promoting micro-forests and urban forests, which are natural and planted woody vegetation that grow in and around human settlements.
2. New incentives are developed to retain and expand vegetation areas on private land, with particular emphasis on increasing local benefit such as edible native species, nectar for honeybees, etc.
3. Expand the Rainscapes and associated programs at the Department of Environmental Protection to include micro forests.
4. Action plan is formulated for expanding urban forests on public land such as schools, parks, etc

4.9 Provide substantial tax benefits for tree planting by private landowners, with increasing per-acre rates over time as forests grow up and increase their carbon stock, and as land values for other uses in the county increase.

Actions:

1. Explore tax incentive options such as the local property tax, but other options should be explored as well. The value of the benefit and its rate of increase need to be high enough to incentivize both the preservation of currently existing trees and forests, and a substantial amount of reforestation. Consider incentives that encourage food production, e.g., walnuts, hazelnuts, etc., and perennial berries (elderberries, raspberries, etc.) to help with developing local food resilience.

Comment: Tax benefits for reforestation are complementary to the Forest Conservation Act, and have the advantage of de-linking new reforestation from the losses of land to suburban sprawl.

2. Establish voluntary sequestration certification program that landscapers can apply to get certification based on knowledge and use of good “carbon farming” practices.
3. Create neighborhood champions program - perhaps small grant program to encourage residents to plant trees or carry out other sequestration activities.
4. Development of subsidy for insurance for tree damage to encourage maintaining trees in residential areas - tied with tree safety information to prevent unsafe trees.
5. Increase services and subsidies for maintaining tree health including support for NGO initiatives by Conservation Montgomery and others.
6. Development of an urban suburban extension program to provide guidance on good practices for carbon sequestration, combined with a stepped up education effort regarding trees, their carbon value and their co-benefits .

4.10 Improve soil health around trees with compost and biochar.

Utilize all dying and infested trees and manage waste ecologically for sequestration and compost whenever possible

Actions:

Produce biochar from downed trees for use in improving soil health. including building a county facility for conversion of trees to bio-char (could be combined with facility to convert ag residue.

Comment: Montgomery County is experiencing severe storms and insect infestations of trees. Consider utilizing the downed trees for biochar production or compost based on a risk and benefit assessment.

4.11 “Mulch Correctly Campaign” to eliminate mulch mounds in the county infrastructure, working with landscaping companies.

Actions:

1. Break down mulch mounds, spread the mulch correctly, leave simple (funny?) signage explaining how mulch mounds kill trees.

Comment: Mulch builds surface moisture where applied. We need it's services for roots. Placed against a tree trunk, mulch can disable the bark and kill the tree in a few years.

Goal 5: Establish a strict policy of no further loss of the County’s natural wetlands, and expand wetlands where possible.

Rationale

Wetlands include swamps, marshes, vernal pools and other water-saturated lands as well as riparian forests which are regularly flooded. While wetlands are only 2-3% of the County land area, these ecosystems are especially valuable because they sequester up to four times as much carbon as forests or pasture due to organic matter accumulated below ground. No-net-

loss of wetlands, the U.S. national policy since the G.H.W. Bush administration, is inadequate, since it allows created wetlands to substitute for natural ones that are destroyed.

In addition to being a crucial habitat for birds and wildlife, wetlands and forests also protect our watersheds in Montgomery County. Stream flows predominantly from the north and west to the south and east, from the Agricultural Reserve down into the suburban and urban areas where most of the county's population resides. For this reason, protection and restoration of existing wetlands including reforestation would provide large benefits in terms of reducing extremes of streamflow, lowering the probability and severity of flooding, reducing erosion and sediment loads, and reducing the hazards and dangers to life associated with excess runoff.

Recommendations

5.1 Stricter protection of wetlands in the County should limit interventions that impact existing wetlands to those needed to control infestations of invasive species such as purple loosestrife and Phragmites.

5.2 County and WSSC increase efforts to protect and expand wetland and riparian ecosystems.

Action:

An agreement with WSSC to ensure protection, restoration and expansion of wetlands and riparian forests are given highest priority for upper watersheds under their protection.

5.3 Vernal pools within the county are mapped, monitored and on public lands, given protection against destruction.

5.4 Assessment of feasibility of reintroduction of beavers into some areas within critical watersheds to naturally expand wetlands and manage stormwater.

5.5 Conduct an assessment of whether a goal of 10% wetlands across the county by 2050 is desirable and/or feasible.

This would include examining if areas can be set aside to allow the pre-colonial shifting mosaic of forest-to-wetland-to-pasture-and-back-to-forest to re-establish. Such a pattern could accelerate carbon drawdown into soils. The soil in pastures that result from ponds that disappear when beaver move to new areas are very high in organic matter.

Goal 6: Increase the County's forest area to 37% in 2027 and 45% in 2035 (as compared to 34% in 2001-2016)

Rationale

The forests, wetlands and other natural ecosystems in Montgomery County must be preserved, restored and expanded as a cornerstone of our overall response to the climate crisis. Protecting intact forests and wetlands and restoring natural ecosystems that have been degraded are highly cost-effective sequestration strategies. The co-benefits have important economic, health and safety implications because forests and trees moderate flooding, decrease wastewater contamination, mitigate extreme heat and drought and protect biodiversity. A recent carbon inventory of the county's land use (WRI GHG Forest Inventory report 2019) show that forests and trees outside forest remain a critical carbon sink for the county. Recent losses of forest to residential and commercial development have been offset by increased tree planting, but substantial increased sequestration can be achieved only if existing forests are preserved and managed, in addition to an aggressive tree planting effort outside forests.

Recommendations

6.1 The County increases its proactive management of natural areas (resources and staff) to reduce degradation from invasive species, overgrazing by deer, and climate related risks such as fire and drought, as well as encroachment by land development along the periphery of forests.

Actions:

1. This also entails changing the traditional focus of parkland establishment in the county, which has emphasized stream valleys, to one that includes uplands on an equal basis, including for the forest conservation easement program.
Comment: The stream valley focus is traditional in the county and indeed throughout the US, and is vital for watershed protection and mitigating the impacts of suburban development. But the limited area of stream valley in the county means that this focus is inadequate to provide the large amount of sequestration and climate adaptation that will be needed in coming decades.
2. Establish a long-term plan to restore forests and wetlands by 2035 on all county parks and lands not required for other uses (e.g. sports fields, visitor centers). The restoration should be either to forests or to wetlands (which are by far the two main kinds of natural vegetation in the county), according to the characteristics of the site.
Comment: Montgomery County was predominantly forested, with limited areas of wetland, at the time of European settlement. Meadows, lawns and other kinds of grasslands are not native to the county, and have lower carbon stocks and biodiversity levels.

6.2 Existing forests and wetlands are given a score reflecting their overall ecological condition to guide investments in assisted natural regeneration, restoration and management.

Actions:

1. Use the county's excellent GIS data system to identify locations where natural regeneration of forests is likely to succeed, without the need for tree planting. Examples of such locations include those close to large parcels of forest and those bordered by tall trees of reproductive size (generally 12" DBH or more) along field edges.
Comment: Where forests can be regenerated naturally from seed input of nearby trees, the costs involved will be much lower than if tree-planting is necessary. Often all that will be required is to fence off the area and leave it fallow. This can make the cost-benefit tradeoff for private landowners tip strongly in the direction of reforestation.
2. Tree species selection for reforestation should anticipate extreme climate events such as drought, flooding, heat waves, etc. and assisted natural regeneration should be the strategy of choice wherever possible.
3. Share information with landowners, accompanied by information on the county's Forest Conservation Act and other incentives for reforestation.

6.3 Reforest, through both tree-planting (where necessary) and natural regeneration (where possible), large blocks of forest on County-owned land using native tree species.

Actions:

1. Explore partnerships with NGOs and private sector to accomplish reforestation goals.
2. Areas prioritized for reforestation should include county lands that are currently leased for cropping (especially those with high-emissions cropping systems such as annual row crops -- e.g. corn, soy and wheat) and those that are mowed simply for visual purposes. Sports fields and other high-density recreational areas would be excluded.
Comment: Reforesting open lands already in public ownership is a straightforward step that the county can take, with triple benefits: increased sequestration from forests, reduced emissions from high-emissions cropland, and providing a visible example to the public of the County's commitment to changing land use towards a more climate-friendly landscape.

6.4 Develop broader landscape strategies by working with other public land-managing agencies in the county and in adjacent counties to coordinate ecosystem restoration plans on watershed and county-wide levels, as well as plans to share the costs involved.

Action:

Coordinate with National Park Service, Maryland State Parks and Wildlife Management Areas, NIH, the Department of Defense, WSSC, and others.

Comment: There can be substantial economies of scale and benefits to effectiveness in coordinating with other public agencies.

6.5 Revise forest policies to incorporate explicit sequestration objectives such as stricter prohibitions against cutting of mature trees, forests, and/or increased penalties for illegal cutting of natural vegetation.

Actions:

Amend the county's Forest Conservation Act (FCA) which requires developers to either preserve forest or pay to protect or establish substitute forests elsewhere, so as to strengthen the incentives for both preservation and reforestation. Currently the FCA requires either protection of substitute forests on a 2 acres for 1 acre lost basis, or reforestation on a 1 for 1 basis. These should be increased to 4 to 1 for protection and 2 to 1 for reforestation.

Comment: The current FCA has mostly served only to maintain a constant forest cover (about 34%), with losses to development only offsetting the gains from tree-planting and natural regeneration. The FCA's approach needs to change from simply offsetting losses, to increasing the amount of forest on private land.

6.6 Hold field days, site visits, seminars and other events at sites that have successfully been reforested in Montgomery County.

Action:

Hold field days, site visits, seminars and other events at sites that have successfully been reforested in Montgomery County. Examples of both natural regeneration and successful tree-planting should be included.

Comment: The experience of both the county's Economic Development staff and the Cooperative Extension Service (in the county and nationwide) has shown that field events are one of the most effective ways to spread the word to landowners. Seeing is believing.

Goal 7: Engage and support farmers, gardeners and their organizations in an aggressive transition to regenerative agricultural practices.

Montgomery County must set an ambitious target for sequestering increasing quantities of carbon as quickly as possible, to achieve its goal of zero emissions by 2035 and then negative emissions thereafter. This will mean adopting a range of regenerative agriculture techniques—which are evolving as research continues to identify effectiveness -- and using education, demonstration projects and financial incentives to help the community embrace the most effective systems. These practices will also increase climate resilience and improve the nutritional quality of our food, food yield, and the health of our environment and economic viability of farming.

Rationale:

Agriculture provides a vital opportunity to mitigate the climate crisis by sequestering carbon and reducing greenhouse gas emissions using nature-based solutions. Agriculture is also essential to a prosperous and healthy county by producing food, improving public health, contributing to our economy, increasing resilience to the impacts of climate change and preserving our rural legacy. The crown jewel is the Agricultural Reserve, a 93,000-acre landscape of both private and public lands for farming, open space, land conservation, rural lifestyles and source-water protection. In order to respond to the climate crisis, Montgomery County should accelerate the adoption of regenerative agriculture, healthy soil and other climate smart practices both within the Agricultural Reserve and throughout our rural, suburban and urban environments in the County. It should also take concrete steps including the implementation of robust policies, visionary programs and creative financial incentives to strengthen the beneficial linkages between county consumers, businesses, community college campuses, investors, and farms. Above all, Collectively, these steps will provide vital co-benefits including more nutritious food, higher yields, increased access to healthy food for all residents, reduced chemical exposures, healthier people and a healthier environment, a stronger economy, and increased resilience to climate change on our farms and throughout our communities.

Recommendations:

7.1 Identify, incentivize, and promote the most promising practices in regenerative agriculture for sequestering carbon and for reducing or eliminating greenhouse gas emissions – set specific targets after getting baseline soil carbon data, i.e. quadruple County acres in regenerative agriculture / increase agricultural sequestration by 15% by 2027.

Actions

1. Implement a robust process to identify, incentivize, promote and evaluate the most promising practices in regenerative agriculture from the “Menu of Recommended Practices for Carbon Sequestration in Agriculture” by the Maryland Department of Agriculture and implement these practices for each commodity. Utilize the COMET Planner to identify those practices which sequester the most carbon. Go beyond these conventional conservation

agriculture practices to incorporate newer science-based practices such as promoting perennial grains, diversified farming systems, and multi-tiered farming incorporating crops, trees, and farm animals

2. Encourage farmers to shift to lower-emissions cropping and livestock systems. These systems should be based on assessment of the emissions and sequestration rates of the whole system and all GHGs, not just a single component (e.g. soil carbon) Examples of lower-emission systems include perennial crops (compared to annual row crops such as corn, soy and wheat), and non-ruminant livestock, , in addition to silvopastoral systems.
Comment: This process should also include exploration of innovative practices that might be piloted and incentivized e.g. integration of kelp into cow feed to reduce methane that they generate. Penn State researchers are championing field tests that [incorporate seaweed/kelp into cow feed](#). Initial results show a 80% decline in methane emissions.
Identify dairy and beef farmers who may want to partner in an early field trial in partnership with University of Maryland.
3. Encourage farmers to shift to silvopastoral systems and increase the use of tree crops and trees for wind- breaks and water protection. Increase incentives and support for farmer-to-farmer programs that sequester carbon and benefit farmers including silvopastoral systems, tree crops and wind breaks, trees in pasture and lawns. This includes expanding existing programs in the Agricultural Reserve such as Re-Leaf the Reserve program.
Comment:
 - 20 trees an acre, or any number of the sort, is an immediately accessible goal.
 - Consider incentives e.g. Ag. Reserve property owners get .5 percent off annual property tax for each number of specified-species tree or shrub greater than the number 20 per acre.
 - Any tree-planting to diversify farming systems should factor in numerous considerations regarding the resilience, sequestration potential, and pollinator support of diverse tree species. Maryland has a list of recommended trees for securing multiple co-benefits.
4. Promote investment and support to carbon farming in other contexts (but NOT as a County offset, rather as a moral public commitment). E.g., Montgomery County partners / twins with another county outside of our region or with a community in a developing country abroad to support carbon farming, tree planting or reforestation programs (providing the additional incentive of an even more meaningful public engagement connection for County residents).

Comments:

Proposed recommendations made during the sequestration group's November 2019 meeting:

- Encourage all corn/soybean/grain farmers to use no-till & cover crops; explore no till organic rather than no till that depends on heavy use of pesticides.
- Work with vegetable/fruit producers to increase or start use of no-till & cover crops, crop rotations, cover crops, and compost applications.
- Support diversifying crops and regenerative local production of fruits and vegetables
- Encourage farmers to reduce the use of nitrogen fertilizer (NRCS CPS 590) to reduce nitrate and nitrous oxide emissions by using split applications, nitrification inhibitors, or better - substitution of compost for chemical inputs - both boosting soil health and yields while reducing costs.
- Encourage use of compost (food scraps, yard waste to divert from landfills and the County incinerator) and composted manure (not raw) to meet nitrogen needs in place of synthetic nitrogen (NRCS CPS 590).

- Encourage farmers to have either herbaceous or woody buffers on every stream.
- Encourage planting of conservation cover or trees on marginal cropland
- Encourage planting hedgerows on farm margins to buffer from residential areas; one or more rows of trees/shrubs can be combined with a row of pollinator meadow (ie. Conservation cover) to draw pollinators and natural enemies
- Encourage multi-story cropping (NRCS CPS 379) and establishment of permaculture industry in County; include outreach and incentives for demonstrations
- Encourage planting warm season grasses in pastures
- Encourage horse farm operators to use silvopasture (NRCS CPS 381)—plant at least 20 trees/acre. Can be nut or timber trees. Encourage horse farms to properly compost their manure.
- Encourage dairy farmers to adopt holistic grazing.
- Work to integrate fruit and nut trees into agricultural operations.

7.2 Prioritize education of farmers by technical assistance providers to assist producers in implementing regenerative agricultural practices, including composting, silviculture, and diversified farming systems.

7.3 Build multi-stakeholder partnerships, i.e. with the Million Acre Challenge, Chesapeake Bay Funders), to accelerate progress and learning in regenerative agriculture.

Actions

1. Bring together Montgomery County farmers, organizations, local and national leaders in regenerative agriculture, programs, academic researchers, funders and investors.
2. Partner with philanthropic foundations and existing learning platforms like the [Soil Health Academy](#) to create more opportunities for farmers and gardeners to learn about innovations at smaller scales.
3. Connect with the county and state to ensure integration of all these goals into the training of those working with the SCD and Extension services in MoCo.
4. Connect now with bold initiatives such as the launching regional Million Acres Challenge for regenerative agriculture (Future Harvest).
5. Develop outreach programs to communicate the agronomic and economic benefits of using these practices including: increased soil health; reduced flooding during flooding rains from improved water infiltration throughout the soil; increased soil water retention during periods of drought; better crop growth with fewer inputs; economic benefits of cover crops; fuel, time and maintenance savings from using no-till farming; improved nutritional value of food grown in healthy soils.
6. Recruit farmers who want to try these (or who are already doing them) to demonstrate them on their farms, and through Extension or Soil Conservation Districts), hold field days to show other farmers how they work (peer-to-peer education)
7. Engage with local science institutions to support analysis of carbon sequestration projects in partnership with farmers.
8. Promote the benefits of carbon farming and soil health by integrating information and encouraging carbon farming practices through Master Gardeners and Koiner Center for Urban Farming and the MCPS curriculum.

7.4 Develop market opportunities for products grown and produced using regenerative agricultural practices.

Actions

1. Maintain and expand permanent local farmer-producer markets throughout the county especially for farmers who use regenerative agricultural practices that support the sequestration strategy.

Comment: Permanent local farmer-producer markets support local food producers, provide produce closer to consumers, and could be linked to a 'carbon-saved' label. This applies not just for Reserve but all of the County's "built environment". A challenge to their development might be current farmers markets, grocers and associated owners.

2. Create a recognition program, including an annual awards program with widespread publicity, that acknowledges and rewards Montgomery County farmers who are already using regenerative agricultural practices, for their leadership in solving our climate crisis.

Comments:

- Mike Scheffel and Jeremy Criss have provided information on the extent to which county farmers are already using methods that are beneficial to the climate as well as having other advantages environmentally (e.g. reducing eutrophication). They can also serve as resources for determining the best way to choose award recipients.
- A carbon rating label would build consumer awareness of the carbon cycle: reduced emissions, sequestration, and other co-benefits of nature-based climate smart agriculture practices (e.g. nutrient density, more local food).

3. Explore innovative practices that could be incentivized and piloted by existing and new farmer leaders in the county.
 - a. Review incentive programs established in California, Colorado and other states and regions to identify optimal programs to replicate
 - b. Prioritize funding for evaluated and prioritized practices by estimating potential for sequestration, GHG reduction and other linked co-benefits. Evaluation could include:
 - i. How much each practice increases sequestration and reduces GHG (see menu of practices or COMET-Planner)
 - ii. Number of new acres on which each carbon-sequestering practice can be adopted
 - iii. Adding woody plants gives most GHG reduction per acre, so encourage silvipasture, more tree planting on marginal cropland, riparian buffers on every stream.
 - c. Consider incentives such as farmers in the Agricultural Reserve get .5 percent off annual property tax for achieving specific benchmarks in regenerative agriculture and carbon sequestration.

4. Consider engaging farmers in getting certified by an independent third-party organization to demonstrate to residents that they use regenerative agricultural practices on their farms to produce their food. Review the various food and farm certification programs to determine which certifications are robust enough to verify that the farmer is using regenerative agricultural practices. If the existing certification programs are not robust enough, then create a “carbon-sequestered” or regenerative agriculture certification program with a label that farmers can use to promote their products and their farm when they meet a set of criteria indicating their use and/or outcomes of regenerative agricultural practices.

Comment: Examples of climate-friendly products that support a sequestration strategy are fruit and nut farming, wood products, and other industries tied to perennial crops and climate-friendly farming practices.

5. Explore new ways to build markets in support of carbon sequestration through agriculture land-use practices
 - a. County government and Montgomery County Public Schools buying food produced by local farmers using regenerative agricultural practices.
 - b. Encourage substitution of concrete with laminated wood (utilizing sustainable forestry practices to avoid excessive tree harvesting)
 - c. Coppice for root-intensive lumber material, coppice and pollard for leaf-hay/tree-hay.

Comments:

- Montgomery County Food Council has a “[MoCo Made](#)” program that promotes County produced foods and they are working on local procurement related to local farms. Local co-packing and production and distribution facilities are also needed to assist farmers with aggregating, storage, processing and distribution of their product.
- For a look at Coppice and Pollard industry doing well for woodland and woodlanders, read arborist William Bryant Logan’s 2019 book “Sprout Lands”
- Sometimes the substitution of concrete with laminated wood can lead to excessive harvesting of wood. We want to be sure to leave old trees standing since they sequester far more carbon than young ones. Of course, concrete production is extremely energy intensive so the trade offs need to be considered

6. Assess policies (such as purchasing/ procurement policies of the county, building standards, etc.) for opportunities to increase demand (e.g. mandate a % of procurement of local regeneratively produced food)
7. Consider working with the Good Food Purchasing Campaign to maximize procurement by schools, prisons, government agencies of foods produced from regenerative producers.
8. Explore creating a local label or certification for farmers and producers using regenerative practices, or alternatively adopting a small percentage of county procurement for farms using an organic regenerative label.

Comment: See labelling examples like [Regenorganic](#).

7.5 Launch a public education and engagement campaign throughout the county to increase the consumption and production of food using regenerative agricultural practices.

Actions

1. Launch a campaign to encourage the consumption of a plant based diet with foods from farmers that use regenerative agricultural practices.
 - a. Review “consumption-based,” carbon-based emissions assessments and programs such as those instituted in Portland, San Francisco, Seattle, Vancouver, London that include plant-based diet and menu programs.
 - b. Expand existing county-based programs such as MCPS meatless offering and “Live Well” initiatives
 - c. Partner with existing local and national programs to utilize best practices for plant based education and behavior change programs such as those provided in the World Resources Institute [“Playbook for Guiding Diners Towards Plant- Rich Dishes in Food Service”](#); and the National Resources Defense Council [Climate-Friendly Menus](#) program which offers fact sheets and strategies on increasing plant based diets.
 - d. Encourage the “less meat, better meat” approach to eating animal foods by educating county residents on the harmful impacts of confined animal feedlot operations (CAFOs) and the climate sequestration benefits, as well as health and other environmental benefits of grass-fed and pasture-raised animal production practices. Share cost-saving strategies to support residents, restaurants and institutions in making this transition.
 - e. Educate the public about food labeling and certifications that incorporate regenerative agricultural practices.

Comments:

- Portland Multnomah County reported that the consumption-based emissions total was more than twice the amount of sector-based emissions. [Vancouver’s “Greenest City Action Plan”](#) includes an ecological footprint measurement significantly influenced by food consumed by residents.
- Identify and apply best practices for plant based education and behavior change programs such as [Meatless Mondays](#) and Meatless March <https://www.meatlessmonday.com/>
- Partner with the Johns Hopkins Center for a Livable Future Meatless Mondays initiative: <https://clf.jhsph.edu/projects/technical-and-scientific-resource-meatless-monday>
- Educate residents utilizing available resources which include:
- The Center for Food Safety’s Soil Solutions <https://soilsolution.org/>, Real Organic Project <https://www.realorganicproject.org/>, the Carbon Cowboys <https://carboncowboys.org/research>, The Savory Institute <https://www.savory.global/>, and Kiss the Ground <https://kisstheground.com/>.

- Utilize the “Balanced Menus - Less Meat, Better Meat” approach developed by the Healthy Food in Health Care Program of Health Care Without Harm <https://noharm-uscanada.org/content/us-canada/less-meat-better-meat> in order to provide menu planning and food purchasing strategies for consumers, institutions and restaurants.
 - Utilize the guide on “Cost Saving and Revenue-Generating Strategies for Purchasing Local Sustainable Meat, Poultry and Other Sustainable Foods” developed by Maryland Hospitals for a Healthy Environment: <https://drive.google.com/file/d/0B9R0wADm2kBqajV2eIJGd0tWMjg/view> for institutions, restaurants and consumers.
2. Launch an urban/suburban backyard and front yard carbon farming / gardening campaign
- a. Launch this campaign as part of a broader, county-wide “climate-friendly landscape” program for residential and commercial landowners, promoting reduced lawn-based landscapes and encourage the planting of native trees, shrubs, and perennials and creation of food, pollinator and rain gardens, leading to multiple co-benefits.
 - b. Promote and engage participation through the county’s existing programs including Rainscapes, tree-planting, etc.
 - c. Create a campaign approach to enlist community action e.g. challenge neighborhoods to form carbon farming groups that can attract support and incentives, modeling change in their community
 - d. Develop an Urban Extension Service (perhaps an out-growth of the Rainscapes program) which enlists the support of key stakeholders such as landscaping companies and Master Gardeners.
 - e. Partner with local organizations and local chapters of national organizations to explore opportunities for integrating this campaign into their existing educational and engagement programs. Promote the many benefits of regenerative agriculture including carbon sequestration, along with other co-benefits including increased climate resilience and adaptation, improved human health and animal health, a healthier environment, and more. Potential organizations to partner with include the YMCA, 4-H.
 - f. Create a campaign approach to enlist community action e.g. challenge neighborhoods to form carbon farming groups that can attract support and incentives, modeling change in their community. e.g. provide tax incentives such as property tax breaks for urban carbon farming
 - a. Information resources:
 - b. [Urban Drawdown Initiative](#): Boulder and San Francisco examples
 - c. [Carbon Capture Gardens](#) on The Nature of Cities
 - d. [How to turn your backyard into a carbon sink](#)
 - e. [Climate wise landscaping](#)
 - f. [Capturing carbon in urban soils: What’s possible?](#)

Goal 8: Help restore the earth's carbon, water and energy cycles as a key climate mitigation and adaptation solution by restoring Montgomery County's soil fertility, microbial activity, and moisture-holding capacity.

Rationale:

Local forests, crops and meadows are growing on soils that are very low in organic content due to the agricultural land use legacy of a previous era. Specific examples of this exist in our region. According to the USGS SPARROW model, developed areas in the Piedmont region account for higher sediment loads to streams and ultimately the Chesapeake Bay than agriculture, not only in terms of load per unit area, but also the total load (Brakebill et al 2010). Eroded stream banks illustrate the depth of sediment deposits, which are essentially soil lacking organic matter. In the picture below of an eroded bank in Ten Mile Creek, the original organic layer is at least a few feet below the surface (see Figure 2).

Restoring healthy soil benefits the quality and quantity of our food, helps to clean up surface water, and plays an active role in sequestering carbon and addressing other climate change impacts.

Practices for building and restoring healthy soil: keep the soil covered at all times, avoiding bare soil that contributes to runoff; maintains living root systems; feeds the soil so that its biology is diversified; contributes to improved health of ecosystems; manages animals to build rather than deplete soil; prioritizes crops that enhance soil carbon retention; protects forests and wetlands; and limits the use of synthetic chemical inputs.



Figure 2: An eroded stream bank in Ten Mile Creek. Note that the original organic layer is at least a few feet below the surface.

Recommendations:

8.1 Establish and implement programs, policies, incentives and investment of resources (i.e. farmer technical assistance, MC procurement contracts, transition financing, etc.) to build healthy soils in the Agricultural Reserve and throughout the entire county.

Actions

1. Increase incentives and support for farmer-to-farmer programs that sequester carbon and benefit farmers such as healthy soil practices (MDA recommended), regenerative agriculture and permaculture by providing educational programs, teaching farms, tax incentives, equipment sharing or co-ops, and opportunities for information sharing.

2. Help farmers gain access to specialized equipment needed to allow cover crops to be planted earlier, before corn or soybeans are harvested (Interseeders, Highboys), and also equipment to terminate cover crops without herbicides (roller-crimpers)
Comment: Explore financing options used in other places for the roller crimpers, i.e. contact the Rodale Institute.

8.2 Establish a County Carbon Sequestration Task Force or Advisory Committee including local scientists, land stewards, and sequestration experts to advise and monitor a county healthy soils program.

Actions

1. Use County models that exist for Task Force/Advisory Committees and other state models to establish the goals and responsibilities.
2. Liaise with the Maryland Department of Agriculture and the Maryland Department of the Environment to coordinate with the state-level healthy soils programs and incentives (e.g., Delegate Dana Stein).

8.3 Launch a healthy soils campaign to educate and engage the public, local officials, and business owners in Montgomery County to build and maintain healthy soils in residential, school, commercial and community landscapes. Provide incentives and education about how to convert lawns and turf into a variety of other landscapes that sequester carbon more effectively and provide multiple other co-benefits for pollinators, biodiversity, storm water management, water quality, food security, and resilience.

Actions

1. Educate and engage residents, businesses, the education sector, institutions, government agencies and landscape companies in the multiple co-benefits of building and maintaining healthy soil in their landscapes.
2. Provide training in optimal methods for building and maintaining healthy soil and for optimal care of their landscape including lawn, trees, food gardens, pollinator gardens, rain gardens, flower gardens, food forests / agroforestry and forests.
3. Work with Schools to pilot / demonstrate landscaping practices including family learning opportunities to help students bring the lessons home.
4. Coordinate/consolidate county programs relevant to residential and commercial properties into a broader “climate-friendly landscape” program.

8.4 Practices for ecosystem rehabilitation to restore soil health and increase ecosystem resilience

Actions

1. Combine tree and other plantings with compost amendments to degraded soils.
2. Mimic natural succession processes when rehabilitating urban forested areas
3. Promote the local production and use of compost tea and promote the education and use of vermicomposting/worm composting and the use of worm castings.

8.5 Establish incentives for increasing healthy soil to sequester carbon

Actions

1. Establish a small grant program for residents to encourage residents to build and maintain healthy soils in their yards and in their neighborhoods.
2. Engage local businesses including home improvement companies, nurseries, landscape companies and local hardware stores in becoming business sponsors to provide residents with supplies at discounted prices.
3. Create a neighborhood champions program to increase the number of participating residents and neighborhoods and to support the development of leading demonstration sites in each neighborhood.
4. Establish a voluntary sequestration certification that landscape companies can apply for after participating in a rigorous training program and demonstrating their implementation of best practices in building healthy soils.
5. Create a reward and recognition program for community members who implement significant carbon sequestration on their property.

8.6 Launch a campaign to convert lawns into a variety of other landscapes that sequester carbon more effectively and provide multiple other co-benefits to our food system, our health, our environment, stormwater management and strengthening climate resilience.

Actions:

1. Encourage conversion of lawns to meadows, food gardens, food forests, pollinator gardens, rain gardens and forests.
2. Incentivize rebuilding of healthy soils in the Montgomery County Agricultural Reserve using tradable development rights, and in the Stream Valley Park System.

3. Update the practices, policies and training for management of public lands to incorporate best practices that optimize healthy soil as the new normal.

8.7 Create and adopt legislation that establishes support for a county-wide healthy soils program.

Actions:

1. Review the Maryland Healthy Soils Incentive Program.
Comment: See: [HB 1063 Maryland Agriculture](#) and [Healthy Soil Program](#); plus new bill to be introduced in 2020 session, Healthy Soils Incentive Program (HB ??)
2. Review legislation passed and proposed in other states and counties to increase healthy soils.

Additional model legislation:

[Soil Health Institute Policy Resources Catalog](#) (This catalog includes: 32 academic institutions, 85 state agencies, 53 state legislative bills, 87 non-profit entities, and 23 for-profit organizations.)

[Vermont S.43](#): An act relating to establishing a regenerative soils program

[New York A3281 – Carbon Farming Tax Credit](#)

[Massachusetts: An act to Promote Healthy Soils](#)

[Oklahoma: Carbon Sequestration Enhancement Act](#)

[Utah: Concurrent Resolution on Carbon Sequestration on Rangelands](#)

3. Collaborate with our region's new Healthy Soils Advisory Council, the Million Acre Challenge and other key partners during this process.
4. Create and adopt legislation to establish and implement a healthy soils program in the county.

8.8 The state Nutrient Management law needs to be reviewed to address the use of compost for lawn care

Actions

1. Review and assess Maryland's [Chapter 10 Fertilizer Application Requirements for Land Not Used for Agricultural Purposes](#) and assess the definitions of "natural organic fertilizer" and "organic fertilizer" in relation to the inclusion of compost.
2. Assess the definitions in the [Nutrient Management Law](#) (see page 7 @ §8–803.4(g) and establish recommendations on to address the broad restrictions for using compost in order to expand the use.

Comments

- Assess other state restrictions such as Washington State [restricts phosphorus](#) in relation to "turf fertilizer." (For example, turf fertilizer is defined as: "Turf fertilizer" means a commercial fertilizer that is labeled for use on turf." And "commercial fertilizer" [is defined as](#) "a substance containing one or more recognized plant nutrients and that is

used for its plant nutrient content or that is designated for use or claimed to have value in promoting plant growth, and shall include limes, gypsum, and manipulated animal and vegetable manures. It does not include unmanipulated animal and vegetable manures, organic waste-derived material, and other products exempted by the department by rule.”

- Issues that need to be addressed include the relationship between the type of compost (e.g. high phosphorus content made with chicken litter) and the variety of uses of compost, such as large, medium, small and urban agriculture and landscaping, and lawn care. Soil testing requirements and other considerations need to be assessed in relation to applications and type of compost use.
- MDA, MDE, County Office of Agriculture, DEP, farmers, organizations and community members related to agriculture, landscaping, small scale food production, gardening need to be included as stakeholders for assessing and resolving the issues related to restricted use of compost for the county lands.

Goal 9: Close the loop by establishing a county-wide food and other organic waste composting system for government, commercial and residential buildings to reach a minimum of 70% diversion, and increase the use of compost for improving soil health and increasing carbon sequestration.

Rationale:

The management of organic waste represents an important opportunity for Montgomery county to both reduce emissions from waste and increase carbon sequestration in soils throughout the county. Montgomery County generates approximately 160,000 tons of compostable waste per year from all sources, according to the [County Strategic Plan to Advance Composting, Compost Use, and Food Scraps Diversion](#) (2018). Food waste recycling is one of the most readily available strategies for achieving multiple benefits including the following: 1) increasing the county recycling rate to achieve a diversion goal beyond 70%; and by using the compost 2) contributing to the achievement of the counties greenhouse gas emission reduction goals through sequestration; 3) using the compost to improve county soil health; 4) reducing stormwater runoff through application of compost to absorb moisture; 5) and many more co-benefits that composting and compost use provide such as improved plant health and crop yields.

As noted in the recent article, [Soil C Sequestration as a Biological Negative Emission Strategy](#), “Organic matter additions such as compost and manures can increase soil C contents, both by virtue of the added C in the amendment itself and through improving soil physical attributes and nutrient availability, such that plant productivity and residue C inputs increase as well ([Paustian et al., 1997](#)).” Life cycle assessments (LCA) need to be considered when evaluating the overall impact of adding organic materials such as compost to soils in order to get an accurate accounting of carbon accrual and net GHG reductions. “Further, where the compost was

sourced from organic waste in which the business-as-usual case involved land filling and thus potential large emissions of methane, [DeLonge et al. \(2013\)](#) estimated an average net GHG mitigation of 23 tCO_{2eq}/ha, over the 3 year study duration, considering the full LCA including landfill waste emissions vs. compost production, transport, application, and subsequent soil improvement impacts. Considering the large amount of organic waste generated by urban centers and impacts of landfilling on GHG emissions and the potential benefits of organic amendments to soil, use of compost is a potentially attractive option that merits additional R&D to assess the full range of environmental costs and benefits.” The County is taking the right steps to both produce and use compost locally to reduce GHG emissions. In addition, there are multiple benefits associated with using composting and the recommendations provided in this report highlight these benefits as well as reinforce the County plans to make and use more compost locally.

Recommendations

9.1 Establish a County-wide composting system, ensuring a supply of quality organic soil amendment/ compost to farms and gardens.

Actions:

1. Mimic what is in place in San Francisco and work closely with the Urban Sustainability Directors Network since MOCO is already a member. Maximize job creation and quantify reduction of methane as a result.
2. Maintain woodchip stocked composting stations that residents can easily access drop off certain waste product to. Landscapers may dump woodchips at the monitored compost station for a comparatively reduced tipping fee (<60 per load), or otherwise creatively compensated for the contribution. As these stations will increasingly use hauling services -better to create Parks capacity for their own motorless cargo-bicycle or draft horse neighborhood scale pick-up/drop-off loops.

Comments:

There are a number of jurisdictions that are listed in the County Composting Strategic Plan that are good examples for the County to model, including DC, since it has a well established Community Composting Programs, composting collection at farmers markets, and they are launching a backyard composting program. These are included in the recommendations for composting and compost use.

County-wide compost sites can be developed on MNC-PPC and parks infrastructure. Woodchip stock is helpful to capacitate nitrogen-heavy kitchen waste. Area landscapers could be encouraged to unload woodchips and such material. Area landscapers having more dump placement opportunities means less petroleum fuels used for hauling woodchips.

9.2 Expand County backyard composting program by allowing food scraps to be composted, providing rodent proof compost containers, and providing compost training based upon best practices and providing demonstration composting education hub sites. Include training on how to use compost and benefits such as building healthy soil and carbon sequestration.

Actions:

1. Amend County codes that restrict composting of food scraps on residential property.
Comment: Review model codes and amend county code to allow food scrap composting. Use resources such as the Institute for Local Self Reliance: [Yes in My Backyard: A Home Composting Guide for Local Government](#)
2. Bulk purchase or provide rebates for residents to obtain approved compost containers for food scraps.
3. Adapt existing training program (from DC backyard composting program) and train-trainers (such as Master Gardeners and other volunteers) to provide trainings on best practices for composting of food scraps and compost use.
Comment on 2 & 3 Use the above resource and model the program after the DC Government backyard composting program. Example of compost containers such as the one offered by [Backyard Composting](#) can be purchased bulk order for a reduced price and sold to residents. There are other resources that could be harnessed, such as partnership with a platform such as [makesoil](#), which seeks to build a movement.
4. Establish Composting Education Hubs throughout the County and include demonstration sites for residents to learn how to compost and how to use compost.
Comment: Establish Koiner Farm as a model for Composting Education Hubs-for training and distribution of composting containers. The Montgomery County Food Council Environmental Impact Working Group and Master Gardeners are already assisting Koiner Farm with this effort.

9.3 Establish County Community Composting Hubs that utilize rodent proof containers, best practices throughout the county.

Actions

1. Adapt the existing DC Community Composting Program to provide neighborhood based community composting.
Comment: Use the Community Composting Done Right: A Guide to Best Management Practices <https://ilsr.org/composting-bmp-guide/> to design and

implement the community composting program and review and adapt the DC program.

2. Provide Master Composter training programs and education about how to compost, compost use, and benefits of compost for healthy soil and carbon sequestration.

Comment: Partner with Master Gardeners and establish Master Composters as trainers.

9.4 Expand On-Farm Composting and Compost Use

Actions:

1. Provide composting training for farmers.
2. Assess and provide technical assistance to support farmers, such as equipment for composting

Comment on 1.& 2: Work with the MC Office of Agriculture and other resources such as the Food Council and the Institute for Local Self Reliance to provide trainings (this is currently being explored)

3. Increase compost use on farms

Comment: Work with the Office of Agriculture to identify areas for expanding and promoting compost use and track usage

4. Review County and State legislation related to on-farm composting and identify amendment improvements to facilitate composting

5. Review and adopt best practices for carbon farming programs-consider incentives

Comment on 4. & 5: Work with the Office of Ag. and farmers to identify and recommend any necessary amendments to increase on-farm composting and to design carbon farming programs

9.5 Institute on-site composting programs throughout the county

Actions

1. Assess the potential for key institutions to establish on-site composting operations
2. Provide support for institutions to identify financial assistance to establish on-site composting operations.

Comment: Identify and utilize model on-site composting programs for institutions, such as Montgomery College. Provide training programs that include best practice management and technical assistance,

9.6 Institute composting program for commercial businesses

Actions:

1. Provide toolkits and training for commercial businesses to establish composting programs based on best practices
2. Provide resources for collecting and transporting food scraps to composting facilities, ideally within the county

Comment on 1 & 2: Use County Composting Strategic Plan and Zero Waste Task Force Report resources to identify models for establishing commercial composting programs

9.7 Institute composting program for multi-family residents

Actions:

1. Provide toolkits and training for commercial businesses to establish composting programs based on best practices
2. Provide resources for collecting and transporting food scraps to composting facilities, ideally within the county

Comment on 1 & 2: Use County Composting Strategic Plan and Zero Waste Task Force Report resources to identify models for establishing commercial composting programs

9.8 Institute composting program for single-family residents

Actions

1. Establish food scrap collection program based upon best practices
2. Provide educational materials and enact an outreach campaign to raise awareness and educate residents about the benefits of composting and compost use
3. Provide resources for transporting food scraps to composting facilities ideally within the county

Comment on 1 & 2: Use County Composting Strategic Plan and Zero Waste Task Force Report resources to identify models for establishing commercial composting programs

9.9 Expand composting, compost use and education in schools

Actions

1. Provide toolkits for schools at all levels to establish composting both on-site and off-site
2. Provide toolkits for schools to use compost on the school grounds and for school gardens
3. Provide toolkits for schools to integrate curriculum modules on composting and compost use
4. Integrate composting and compost use into the SERT program
5. Address and provide facility staff with support to institute food scrap composting

Comment on 1, 2, 3, & 4: The Institute for Local Self Reliance is creating a best practice guide for schools to use. Work with MCPS as a key stakeholder and county programs, such as Rainscapes and Master Gardeners should be involved in executing this goal along with PTA's and Green Teams. Other organizations involved in this effort are: Mont. Cnty. Food Council and Bethesda Green. Use strategies such as food waste audits to raise awareness of wasted food.

9.10 Institute food scrap composting program at all farmers markets

Actions

1. Provide food scrap composting program collections and pick up and composting of food scraps at all farmers markets

Comment: Model the program after best practices established in DC

9.11 Expand composting capacity within the county

Actions

1. Divert residential food scraps into backyard composting and community composting systems
Comment: Expand the backyard composting program (see corresponding recommendations)
2. Identify and establish mid scale food scrap composting operations throughout the county/on county owned properties (to reduce transportation carbon emissions)
3. Establish on-site composting programs for institutions, schools, businesses
4. Stop incinerating food scraps and waste and divert food scraps and food waste from the county incinerator and compost the food scraps and food waste preferably in the county
5. Convert the Dickerson Yard Waste Composting facility to an operation that also composts food waste and scraps

Comments:

- 2, 3, 4, & 5: Utilize all food scraps and waste for recycling this valuable resource and create compost. Model on-site composting programs after

best practices. Model the conversion of the facility after Prince George's Composting Facility and other best practices and methods. Facility and equipment upgrades and increased staffing will be necessary and assessment on return on investments should include analysis of co-benefits related to compost use. Work with communities surrounding the Dickerson Yard Waste Composting Facility to address and mitigate the impact of using the facility for food scrap composting. Utilize assessments such as the Food Council Environmental Impact Working Group March 3, 2019 summary of potential options <https://mocofoodcouncil.org/resources/>

- Model mid-scale operations after local and national best practices and facilities such as Veterans Compost and provide support for composting businesses such as Compost Crew
6. Assess and implement necessary modifications to the Transfer Station Annex Building to accommodate receipt and transfer of food scraps for composting
 7. Identify, establish and map carbon sources such as wood chips from landscaping services and “brown” organic materials and promote the use of them for composting food scraps and waste

9.12 Expand use of compost in the county and support and prioritize the use of “MoCo-locally made compost”

Actions

1. Create and implement a broad-based education and outreach program on the benefits of composting and compost use
Comment: Identify and modify existing educational materials used by model programs
2. Identify key areas for expanding the use of compost, such as mulching for landscaping and gardens
Comment: Utilize existing county programs such as Rainscapes, tree planting programs and expand compost use through businesses and landscaping services and gardening programs
3. Institute a program to promote compost use for food production on private properties/lawns
Comment: Identify and utilize best practices and model programs to establish local food production using compost similar to “Victory Gardens”
4. Conduct a compost marketing study to identify the potential markets and sources of high quality compost
Comment: Work with the Chamber of Commerce, MC Office of Economic Development, MC Green Business Certification Program, and The US Composting Council <https://www.compostingcouncil.org/> to conduct the marketing study

9.13 Institute incentive and dis-incentive programs that promote composting and compost use

Actions

1. Institute a non-regressive “Save as You Throw” (Pay as You Throw) program (This strategy charges residents based on the amount of trash produced rather than via property taxes or fixed fees. Make sure the fee structure is not regressive, so as not to impact low-income residents disproportionately. Note: this was also a recommendation in the County Executive Transition Team Report https://www.montgomerycountymd.gov/OPI/Resources/Files/2019/MarcElrich_Transition_Team_Report.pdf
Comment: Examples of models for Save as You Throw programs are Austin, San Francisco, Minneapolis. Review studies such as Skumatz Economic Research Associates on separate unit pricing programs and apply effective strategies that address equity issues.
2. Establish differential tip fees to motivate generators to source-separate food scraps and other organics, and encourage collectors to provide recycling collection of such materials.

9.14 Establish the carbon emissions sequestration values related to the recommendations provided in the Zero Waste Task Force Report

Actions

1. Estimate the comparison of carbon emissions reductions in relation to the high priority zero waste management strategies such as composting compared to incineration.
2. Utilize carbon emissions sequestration estimates of potential strategies and methods to establish program priorities
3. Identify co-benefits of resource management methods, such as composting and compost use compared to incineration and landfill disposal of food scraps and waste

9.15 Expand the collection and redistribution of food that can be consumed

Actions

1. Identify and map all available food recovery opportunities and coordinate with food rescue stakeholders to facilitate the collection and food redistribution to food insecure populations
2. Establish barriers and solutions to food donations-such as providing education for food donors related to proper separation and storage. Other issues such as standardizing food labels need to be explored at the State level.
3. Educate and facilitate the use of the tax incentive to increase the amount of food farmers donate to food rescue organizations

Comment on 1, 2, & 3: Key stakeholders include: Manna Food and Community Food Rescue, County HHS, Mont. Cnty Food Council.

Additional sources include: businesses, schools/MCPS, Office of Ag., farmers

9.16 Update the county website to include more information and resources on how to compost, how to use compost, and benefits of composting

Actions

1. Expand the county website information on how to compost, how to use compost, benefits of composting and using compost, videos, and a library of additional resources
Comment: Work with the Master Gardeners, Institute for Local Self Reliance, Food Council Environmental Impact Working Group and other organizations to expand the information and resources on the website

9.17 Support state level organics diversion, composting and compost use recommendations and legislation

Actions

1. Identify and implement recommendations in the report HB 171 that align with Climate Plan recommendations
Comment: Work with stakeholders who were involved in the study group such as the Sierra Club, the Institute for Local Self Reliance (see comments on recommendations in Annex 2) composting companies, etc. to identify key recommendations for advancing the Climate Plan composting and compost use goals

9.18 Modify the County's waste management plan. Eliminate incineration and put residuals in a safe and remote landfill, accessible by clean-energy rail haul. Give oversight of solid waste management to DEP (not a private entity with its own interests). (Note: this is from the County Executive Transition Team Report.)

Comment:

The Northeast Maryland Waste Disposal Authority. This privately-owned organization has had control over the Division of Solid Waste for decades, and they receive County dollars to administer our program. Their vested interest is in incineration and therefore suppress any efforts to handle the County's trash in a greener and more responsible way. (Note: this is from the County Executive Transition Team Report)

9.19 Ensure that the Solid Waste Advisory Committee is informed about all composting related recommendations and solicit support

Comment

The Solid Waste Advisory Committee is comprised of citizen advisors charged with reviewing and advising county solid waste plans and programs

Appendix A: Sequestration Resources

Appendix B: Report Draft: Agriculture and Soils

Appendix C: Report Draft: Forests and Wetlands

Appendix D: Report Draft: Urban-Suburban, Food
Waste and Land-Use

Appendix E: Graphic poster